

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Tell whether or not the relation is a function.

1) $\{(1, -6), (2, -6), (6, -6), (8, -5), (11, -1)\}$

A) Yes

B) No

1) _____

Determine the domain and range of the relation.

2) $\{(7, 4), (-3, 6), (1, -7), (-5, 9), (4, 8)\}$

A) Domain: $\{-3, 4, 4, 6, -5\}$; Range: $\{-7, 7, 9, 1, 8\}$ B) Domain: $\{-7, 7, 9, 1, 8\}$; Range: $\{-3, 4, 4, 6, -5\}$ C) Domain: $\{4, 6, -7, 9, 8\}$; Range: $\{-3, 4, -5, 7, 1\}$ D) Domain: $\{-3, 4, -5, 7, 1\}$; Range: $\{4, 6, -7, 9, 8\}$

2) _____

Evaluate as requested.

3) Given that $f(x) = x^2 - 4x + 3$, find $f(-2)$.

A) 9

B) -1

C) 15

D) -7

3) _____

4) Given that $g(x) = \frac{x-3}{x+4}$, find $g(-14.25)$.

A) $\frac{45}{73}$ B) $\frac{69}{41}$ C) $-\frac{45}{73}$

D) 1

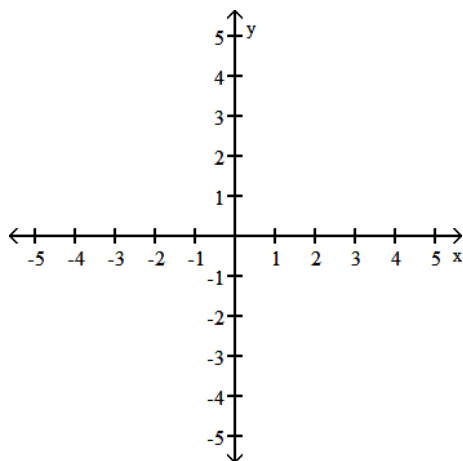
4) _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Graph the function.

5) $f(x) = \frac{1}{3}x - 2$

5) _____

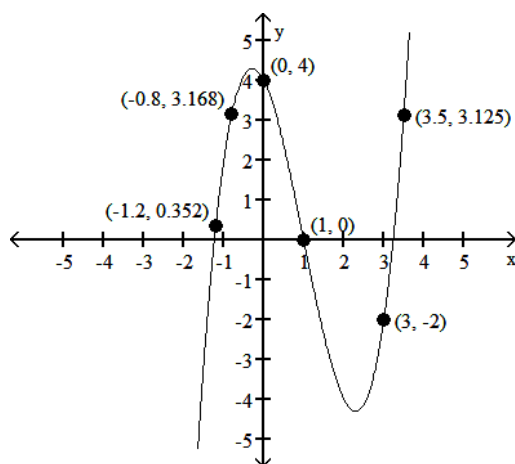


MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Evaluate as requested.

6) A graph of a function g is shown below. Find $g(-0.8)$.

6) _____



A) 3.168

B) -2.5

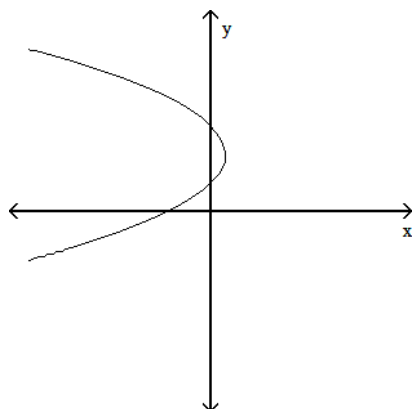
C) 3

D) 4.238

Determine whether the graph is the graph of a function.

7)

7) _____



A) Yes

B) No

Find the domain of the function.

8) $f(x) = -7x + 7$

8) _____

A) $\{x \mid x > -7\}$, or $(-7, \infty)$

B) $\{x \mid x \neq 0\}$, or $(-\infty, 0) \cup (0, \infty)$

C) all real numbers, or $(-\infty, \infty)$

D) $\{x \mid x > 0\}$, or $(0, \infty)$

9) $f(x) = \frac{x}{x-3}$

9) _____

A) $\{x \mid x > 0\}$, or $(0, \infty)$

B) $\{x \mid x < 0\}$, or $(-\infty, 0)$

C) $\{x \mid x \neq -3\}$, or $(-\infty, -3) \cup (-3, \infty)$

D) $\{x \mid x \neq 3\}$, or $(-\infty, 3) \cup (3, \infty)$

Solve the problem.

10) The function H described by $H(x) = 2.75x + 71.48$ can be used to estimate the height, in centimeters, of a woman whose humerus (the bone from the elbow to the shoulder) is x cm long. Estimate the height of a woman whose humerus is 33.8 cm long.

10) _____

A) 21.47 cm

B) 108.03 cm

C) 164.43 cm

D) 40.43 cm

- 11) The mathematical model $C = 400x + 70,000$ represents the cost in dollars a company has in manufacturing x items during a month. How many items were produced if costs reached \$230,000?
- A) 229,600 items B) 750 items C) 400 items D) 225 items

11) _____

Find the slope of the line containing the given points.

- 12) $(-1, 7)$ and $(-1, -9)$

A) 0

B) - 8

C) 1

D) not defined

12) _____

- 13) $(19, -6)$ and $(-12, 1)$

A) $-\frac{5}{7}$

B) $-\frac{31}{7}$

C) $\frac{7}{31}$

D) $-\frac{7}{31}$

13) _____

- 14) $f(8.3) = 6.5$ and $f(-11.6) = -7.9$

A) $\frac{144}{199}$

B) $\frac{199}{144}$

C) $-\frac{199}{144}$

D) $-\frac{144}{199}$

14) _____

Determine the slope, if it exists, of the graph of the given linear equation.

- 15) $y = -\frac{1}{2}x + 3$

A) $m = \frac{1}{2}$

B) $m = -3$

C) $m = -\frac{1}{2}$

D) $m = 3$

15) _____

- 16) $x = 8$

A) $m = 0$

B) not defined

C) $m = -8$

D) $m = 8$

16) _____

- 17) $y = \frac{1}{3}$

A) not defined

B) $m = 0$

C) $m = \frac{1}{3}$

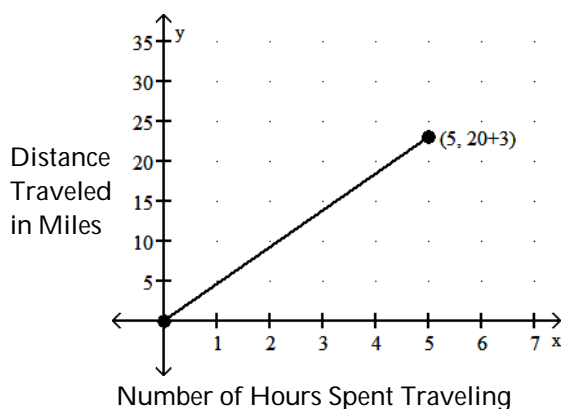
D) $m = -\frac{1}{3}$

17) _____

Solve the problem.

- 18) Find the average rate of change.

18) _____



A) 0.2 mph

B) 4.6 mph

C) 2.6 mph

D) 0.4 mph

- 19) A deep sea diving bell is being lowered at a constant rate. After 12 minutes, the bell is at a depth of 500 feet. After 55 minutes the bell is at a depth of 1400 feet. What is the average rate of lowering per minute? Round your answer to the nearest tenth. 19) _____
- A) 20.9 ft per min B) 16.4 ft per min C) 0.05 ft per min D) 25.5 ft per min

- 20) The cost of manufacturing a molded part is related to the quantity produced during a production run. When 100 parts are produced, the cost is \$300. When 300 parts are produced, the cost is \$1300. What is the average cost per part? 20) _____
- A) \$0.20 per part B) \$3.33 per part C) \$6.00 per part D) \$5.00 per part

Find the slope and the y-intercept of the line with the given equation.

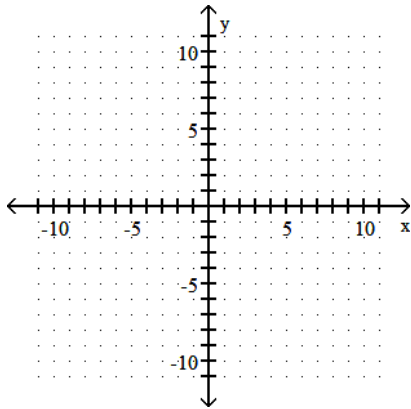
- 21) $y = \frac{3}{4}x - 1$ 21) _____
- A) -1; (0, -1) B) $\frac{3}{4}$; (0, -1) C) 1; (0, -1) D) $-\frac{3}{4}$; (-1, 0)

- 22) $5x - 2y + 5 = 0$ 22) _____
- A) $\frac{5}{2}$; $\left(0, \frac{5}{2}\right)$ B) $-\frac{5}{2}$; $\left(0, -\frac{5}{2}\right)$ C) $-\frac{5}{2}$; $\left(0, \frac{5}{2}\right)$ D) $\frac{5}{2}$; $\left(0, -\frac{5}{2}\right)$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Graph the equation using the slope and the y-intercept.

- 23) $y = \frac{5}{4}x - 4$ 23) _____



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem.

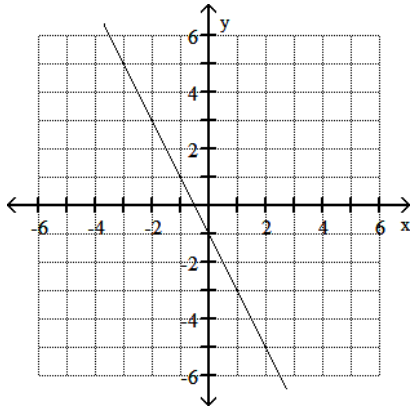
- 24) To convert a temperature from degrees Celsius to degrees Fahrenheit, you multiply the temperature in degrees Celsius by 1.8 and then add 32 to the result. Express F as a linear function of c. 24) _____
- A) $F(c) = 1.8 + 32c$ B) $F(c) = 1.8c + 32$ C) $F(c) = \frac{c - 32}{1.8}$ D) $F(c) = 33.8c$

- 25) The cost for labor associated with fixing a washing machine is computed as follows: There is a fixed charge of \$35 for the repairman to come to the house, to which a charge of \$22 per hour is added. Find an equation that can be used to determine the labor cost, $C(x)$, of a repair that takes x hours. 25) _____
- A) $C(x) = (35 + 22)x$ B) $C(x) = 35 - 22x$
 C) $C(x) = 22 + 35x$ D) $C(x) = 35 + 22x$

- 26) Marty's Tee Shirt & Jacket Company is to produce a new line of jackets with a embroidery of a Great Pyrenees dog on the front. There are fixed costs of \$680 to set up for production, and variable costs of \$43 per jacket. Write an equation that can be used to determine the total cost, $C(x)$, encountered by Marty's Company in producing x jackets, and use the equation to find the total cost of producing 90 jackets. 26) _____
- A) \$4562 B) \$4530 C) \$4542 D) \$4550

Write an equation in slope-intercept form for the line shown.

- 27) 27) _____



- A) $y = 2x - 1$ B) $y = -2x - 1$ C) $y = 2x + 1$ D) $y = -2x + 1$

Write a slope-intercept equation for a line with the given characteristics.

- 28) $m = -\frac{2}{9}$, passes through $(2, -1)$ 28) _____

- A) $y = \frac{2}{9}x + \frac{5}{9}$ B) $y = -\frac{9}{2}x + \frac{5}{2}$ C) $y = -\frac{2}{9}x + \frac{5}{9}$ D) $y = -\frac{2}{9}x - \frac{5}{9}$

- 29) Passes through $(9, 8)$ and $(-5, 8)$ 29) _____
- A) $y = 5x - 47$ B) $y = 10x - 92$ C) $y = 8$ D) $y = 2x - 20$

- 30) Passes through $(-9, 0)$ and $(-6, 5)$ 30) _____
- A) $y = \frac{9}{11}x + \frac{109}{11}$ B) $y = -\frac{9}{11}x + \frac{109}{11}$
 C) $y = -\frac{5}{3}x + 15$ D) $y = \frac{5}{3}x + 15$

Write equations of the horizontal and the vertical lines that pass through the given point.

- 31) $(-9, 3)$ 31) _____

- A) horizontal: $y = 3x + 0$;
 vertical: $x = -9y + 0$ B) horizontal: $x = -9$;
 vertical: $y = 3$
 C) horizontal: $y = 3$;
 vertical: $x = -9$ D) horizontal: $y = 3x + 0$;
 vertical: $3y = x + 0$

Determine whether the pair of lines is parallel, perpendicular, or neither.

32) $3x - 8y = 18$

$32x + 12y = 18$

A) Parallel

B) Perpendicular

C) Neither

32) _____

33) $y = -\frac{17}{4}x + 3$

$y = \frac{4}{17}x + 3$

A) Parallel

B) Perpendicular

C) Neither

33) _____

Determine the equation of the line described. Put answer in the slope-intercept form, if possible.

34) Through $(-5, -1)$, perpendicular to $8x + 5y = -45$

A) $y = \frac{8}{5}x - 17$

B) $y = -\frac{5}{8}x - \frac{17}{8}$

C) $y = \frac{5}{8}x$

D) $y = \frac{5}{8}x + \frac{17}{8}$

34) _____

35) Through $(4, -3)$, parallel to $-7x + 9y = -109$

A) $y = \frac{9}{7}x + \frac{3}{7}$

B) $y = \frac{7}{9}x - \frac{55}{9}$

C) $y = -\frac{7}{9}x + \frac{55}{9}$

D) $y = -\frac{4}{9}x - \frac{109}{9}$

35) _____

Solve the problem using your calculator.

36) Ten students in a graduate program were randomly selected. Their grade point averages (GPAs) when they entered the program were between 3.5 and 4.0. The following data were obtained regarding their GPAs on entering the program versus their current GPAs. Use a graphing calculator to model the data with a linear function that predicts a student's current GPA as a function of his or her entering GPA.

36) _____

Entering GPA	Current GPA
3.5	3.6
3.8	3.7
3.6	3.9
3.6	3.6
3.5	3.9
3.9	3.8
4.0	3.7
3.9	3.9
3.5	3.8
3.7	4.0

A) $y = 2.51 + 0.329x$

C) $y = 3.67 + 0.0313x$

B) $y = 5.81 + 0.497x$

D) $y = 4.91 + 0.0212x$

- 37) The paired data below consist of the test scores of 6 randomly selected students and the number of hours they studied for the test. Use a graphing calculator to model the data with a linear function that predicts a student's score as a function of the number of hours he or she studied.

37) _____

Hours	5	10	4	6	10	9
Score	64	86	69	86	59	87

A) $y = 67.3 + 1.07x$

B) $y = -67.3 + 1.07x$

C) $y = 33.7 - 2.14x$

D) $y = 33.7 + 2.14x$

- 38) The paired data below consist of the costs of advertising (in thousands of dollars) and the number of products sold (in thousands). What is the correlation coefficient?

38) _____

Cost	9	2	3	4	2	5	9	10
Number	85	52	55	68	67	86	83	73

A) 0.708

B) -0.071

C) 0.246

D) 0.235

Solve the equation.

39) $4x + 5 = 0$

39) _____

A) $-\frac{5}{4}$

B) $-\frac{4}{5}$

C) $\frac{5}{4}$

D) $\frac{4}{5}$

40) $-23 = -6x - 5$

40) _____

A) -8

B) 3

C) 8

D) -12

41) $3(4x + 1) = 5 - 5(4x - 3)$

41) _____

A) $-\frac{5}{32}$

B) 17

C) $\frac{17}{32}$

D) $\frac{5}{32}$

42) $\frac{3}{2}x + \frac{1}{5} = \frac{1}{4}x + \frac{1}{10}$

42) _____

A) $\frac{45}{2}$

B) $-\frac{2}{35}$

C) $-\frac{1}{5}$

D) $-\frac{2}{25}$

Solve the problem.

- 43) A shipping company has determined that their drivers in Montana on average travel 80 miles on a single delivery route for mail order products. This is five times the distance of an average route for their drivers in New Jersey. How far, on average, is the route in New Jersey?

43) _____

A) 400 mi

B) 16 mi

C) 80 mi

D) 160 mi

- 44) On average, the number of electric guitars sold in Texas each year is 95,768, which is about seven times the average number of guitars sold each year in Wyoming. How many electric guitars, on average, are sold in Wyoming?

44) _____

A) 13,681 guitars

B) 670,376 guitars

C) 9576.8 guitars

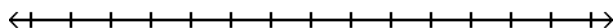
D) 95,768 guitars

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve and graph the solution set.

45) $y - 11 < -16$

45) _____



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem.

- 46) On average, 9.2 % of the money consumers spend in supermarkets in England goes to the purchase of snacks and baked goods, which is four times the percent of money spent on cereals and rice. 46) _____

What percentage of the money spent by consumers in England's supermarkets is for the purchase of cereal and rice?

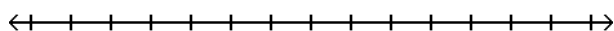
- A) 1.2% B) 2.3% C) 3.3% D) 2.8%

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve and graph the solution set.

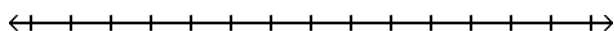
47) $-5x + 10 \leq -6x - 2$

47) _____



48) $-6(3x + 4) < -24x - 42$

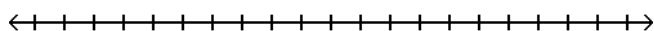
48) _____



Solve and write interval notation for the solution set. Then graph the solution set.

49) $2 < 2x + 2 \leq 10$

49) _____



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem.

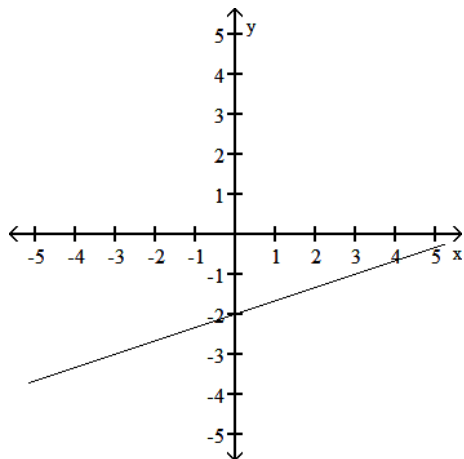
- 50) A salesperson has two job offers. Company A offers a weekly salary of \$280 plus commission of 14% of sales. Company B offers a weekly salary of \$560 plus commission of 7% of sales. What is the amount of sales above which Company A's offer is the better of the two? 50) _____

- A) \$4100 B) \$4000 C) \$8000 D) \$2000

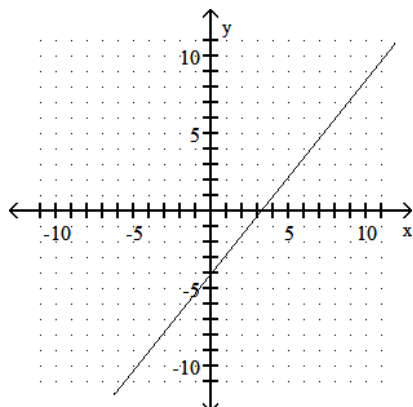
Answer Key

Testname: EXAM1

- 1) A
- 2) D
- 3) C
- 4) B
- 5)



- 6) A
- 7) B
- 8) C
- 9) D
- 10) C
- 11) C
- 12) D
- 13) D
- 14) A
- 15) C
- 16) B
- 17) B
- 18) B
- 19) A
- 20) D
- 21) B
- 22) A
- 23)

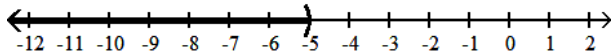


- 24) B

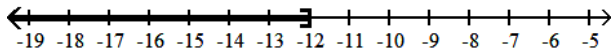
Answer Key

Testname: EXAM1

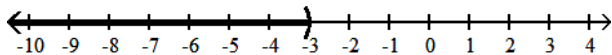
- 25) D
- 26) D
- 27) B
- 28) D
- 29) C
- 30) D
- 31) C
- 32) B
- 33) B
- 34) D
- 35) B
- 36) C
- 37) A
- 38) A
- 39) A
- 40) B
- 41) C
- 42) D
- 43) B
- 44) A
- 45) $\{y|y < -5\}$ or $(-\infty, -5)$



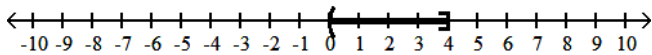
- 46) B
- 47) $\{x|x \leq -12\}$ or $(-\infty, -12]$



- 48) $\{x|x < -3\}$ or $(-\infty, -3)$



- 49) $(0, 4]$



- 50) B